IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 10/711,389 Filed: September 15, 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 2818 Confirmation No. 5388

DECLARATION OF WERNER ZUMBRUNN

Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

1. I, Werner Zumbrunn, am a co-inventor of Swiss Patent Application No. 01833/03 filed 27 October 2003, entitled TRANSDERMALES SYSTEM. Hans Werner Van de Venn was also co-inventor of Swiss Application No. 01833/03.

2. PCT/IB2004/002947 was filed 13 September 2004, entitled TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM, claiming priority to Swiss Application No. 01833/03 and listing, in addition to co-inventors Zumbrunn, and Van de Venn, two additional co-inventors, Guy Di Pierro and George Imanidis.

3. The above-referenced U.S. Patent Application Serial No. 10/711,389 was filed 15 September 2004 as TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM, without my involvement and I recognize it is substantially identical to PCT/IB2004/002947. U.S. Serial No. 10/711,389 claims priority to Swiss Application No. 01833/03. This application lists co-inventors Zumbrunn, Imanidis, Van de Venn, and Di Pierro.

4. At the time co-inventors Van de Venn and I conceived of the invention described and claimed in Swiss Application No. 01833/03, I was employed at Fachhochschule Solothurn, which is now Fachhochschule Nordwestschweiz.

5. I reviewed and participated in the preparation of Swiss Application No. 01833/03, which is standard practice. In addition, I had to sign an inventor disclosure according to article 21 of the Swiss Patentlaw. Apart from that, inventions developed by an employee generally belong to the employer according to article 332(1) of the Swiss Code of Obligation.

6. Fachhochschule Solothurn, my former employer, filed PCT/IB2004/002947 in the International Bureau of WIPO under the Patent Cooperation Treaty (PCT). Because the United States was a designated state, my signature as inventor was necessary for the application, according to Article 27(3) and Rule 18.4(c) of PCT. Beginning of April 2005 I was asked by my employer to sign a DECLARATION FOR UTILITY OR DESIGN APPLICATION (37 CFR 1.63) without having seen the specifications and claims of the US application.

7. Therefore, on 7 April 2005 I sent a letter to the U.S. Patent & Trademark Office by facsimile regarding a Notice to File Missing Parts of Non-Provisional Application relating to U.S. Serial No. 10/711,389, and a Declaration provided to me for signature. I asked the U.S. Patent & Trademark Office whether I should sign the Declaration without having reviewed and understood the application and claims and what should I do if I did not agree with the application and the claims.

8. After having seen the US application thereafter, on 21 April 2005, I wrote to the U.S. Patent & Trademark Office indicating that I had signed the Declaration referred to above, commenting however, that I had not been involved in preparing the U.S. application and that I was not allowed to make any contribution to the description and claims. I then described further comments summarizing my review.

9. I understand that when filing a subsequent application within one year of the first filing, it is permissible to add new specification text, embodiments, and claims to a first application filing, and also to modify language in a first filing. Such additional and revised information may involve contributions of one or more new co-inventors and not all of the original co-inventors may have been involved in all of any new inventions disclosed in the subsequent application.

10. With regard to my comment that I was not involved in preparing the application and was not allowed to make any contribution to the description and

the claims, as described above, I understand that my employer can legitimately cause a patent application to be filed under the Patent Cooperation Treaty in the International Bureau of WIPO with the participation of one or more co-inventors, as it did in this case. I understand that under the auspices of the Patent Cooperation Treaty, such applications can later be filed in other designated countries, such as the United States of America.

11. On September 12, 2007 I took notice of a draft of a preliminary amendment to US patent application 10/711,389 which the patent lawyer is planning to send to the USPTO, and which I would like to comment as follows:

a. I understand that the priority claim to Swiss Application No. 01833/03 allows for the description of embodiments which both correspond to and add to the disclosure of Swiss Application No. 01833/03.

b. Nearly all the comments I made under "Summary of the invention" and under "Claims" and under "Drawings" are addressed now by the above mentioned draft of a Preliminary Amendment which I have read and which is being submitted concurrently herewith.

c. Although I am neither a pharmacist nor a patent attorney, I notice that most of my comments were taken into account when the Preliminary Amendment was drafted. In addition, new claims [36, 37] were added which correspond to claims of my prior invention.

d. Furthermore, as noted above, I understand that it is permissible to add new specification text, embodiments, and claims to a first application filing, and also to modify language in a first filing. Such additional and revised information may involve contributions of one or more new co-inventors and not all of the original co-inventors may have been involved in all of any new inventions disclosed in the subsequent application.

12. Accordingly, I now sign a Supplemental Declaration which references the draft of a Preliminary Amendment to be filed, thereby confirming that I am a co-inventor of one or more of the claims of U.S. Serial No. 10/711,389 and that I have read the contents of its specification, including the claims, as amended by the draft of the Preliminary Amendment.

13. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

W. Zumbrunn

Werner Zumbrunn

Date: Bregg, 26.9.2007

Attorney Docket No. DIPI0002
Client.Matter No. 22494.0003

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 11/711,389 Filed: September 1,5 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 1615 Confirmation No. 5388

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria. VA 22313-1450

Dear Sir:

Prior to an examination on the merits, please amend the application as described below.

- **Amendments to the Specification** begin on page 2;
- **Amendments to the Claims** begin on page 5;
- **Amendments to the Drawings** being on page 10 (annotated sheets showing the changes and replacement sheets are attached); and
- **Remarks** begin on page 11.

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph number **[0019]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

US5879322 (Lattin, et al.) is directed to a self-contained transdermal drug delivery device by electro transport means with electrodes designed to be worn on the skin. The electro transport device can be used by patients to deliver a drug during a prescribed course of therapy, e.g. the delivery of an analgesic to control pain.

Please replace paragraph number **[0039]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

Solvent that is not absorbed by the skin in a sufficient way is carried off in another way than by absorption through the skin, e.g. by evaporation into the environment and/or by absorption by ~~an other mean,~~ another means, e.g. absorbing substance such as silica gel. By this it is possible to avoid negative decrease of the concentration of active substance due to accumulation of the solvent which would impact the diffusion rate through the skin. Especially solvents based on water and/or alcohol are having at temperatures nearby the temperature of skin a vapor pressure which is sufficiently high to carry off the solvent by evaporation. However, the carrying off and/or diffusion rate of the solvent preferably is adjusted to the diffusion rate of the active substance through the skin to avoid accumulation of the solvent or precipitation of the active substance on the skin in a negative way.

Please replace paragraph number **[0068]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIG. 3 is showing a third embodiment of a dispensing system 1. A first and a second active substance s1, s2 is stored in a first and a second reservoir 5.1, 5.2. The flow (indicated by arrows) of the first and the second fluid s1, s2 into a connecting pipe 25 is controlled by a first and a second valve 19.1, 19.2, as described above interconnected, to a programmable flow control device [[15]] 8. The connecting pipe 25 may comprise mixing means 26 such as impellers or vortex means providing an appropriate preparation

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of mixture of the active substances s1, s2. This offers the opportunity to administer drugs which cannot be stored together due to incompatibility or another reason. Alternatively or in addition the bringing together of several active substances may take place in the administration chamber 9 of the administration device 6. The solvent absorption chamber 13 is separated by separation means 14 in the described manner from the administration chamber 9. The separation means 14 are made such that solvent is preferably absorbed by evaporation (indicated by arrows 17). In the shown embodiment the evaporation rate is controlled/adjusted by a fluid stream (indicated by arrows 27), preferably air, which is guided into the solvent absorption chamber 13 by an inlet 28 and exits by an outlet 29. The condition of the administration device and the absorption of the at least one active substance into the skin 11 as indicated by arrows 18, may be controlled by sensors 30, 31 interconnected to the control device [[15]] 8 by data connections 32. The sensors of the herein described embodiment are arranged in the administration chamber 9 and the solvent absorption chamber 13 such that the administration of the at least one active substance and/or the absorption of the at least one solvent may be controlled. Depending on the field of application, the sensors 30, 31 are suitable to measure relevant parameters such as temperature and/or humidity and/or pressure and/or concentration.

Please replace paragraph number **[0072]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIGS. 4 a) to c) are showing three further embodiment of a dispensing system 1 for administration of at least one active substance s. The dispensing systems 1 according to FIGS. 4 a) to 4 c) have in general a similar set up comprising an outer housing 39 with a display 38 interconnected to a programmable control unit 8. The lower surface of the devices 1 serves as footstep 40 while in use on a porous surface 10 and comprises an interface 12 for transferring active substance to a skin 11 through the porous surface 10. Inside the housing 39 the devices 1 comprise a drug reservoir 5 for at least one active substance s. The drug reservoir 5 is preferably a collapsible bag or a pressurized compartment due to internal or external pressure suitable to expel active substance into the administration chamber 9 via a pipe 4 which interconnects the drug reservoir 5 with

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the administration reservoir 9. In use the administration reservoir 9 is fluidly interconnected to the porous surface 10 of skin 11 such that active substance s dispensed into the administration chamber 9 may pass into skin 11 as indicated by arrows 18. The flow of the active substance s is controlled by a first valve and/or a pump 36 which is logically interconnected to the control unit 8 which controls the administration of active substance s according to a preset regime. A solvent recovery means 13 is used to remove depleted solvent from the administration chamber 9 by waste pipe 41. If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the ~~administration~~ drug reservoir 5 or the connecting pipe 4 by pump 36.

Please replace paragraph number **[0075]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

The embodiment of FIG. 4c) comprises a pressurized drug reservoir 5 in conjunction with a tube or pipette 4, a micro pump 36 controlled by control unit 8 pre-programmed to dispense and start pumping active substance s onto diffusion surface 12. A second pinch valve and/or micro pump 37 interconnects the administration chamber 9 with the waste reservoir 13. The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13.

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims:

1. (Currently amended) A [Method] method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:
   a) [Dispensing] dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,
   [B]b) [Separation] separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means ~~such that the at least~~ wherein one active substance achieves a certain level of concentration in vicinity to the [[a]] porous surface to be treated;
   c) [Absorption] absorption of the active substance by the porous surface to be treated via diffusion ~~such that the level of concentration in the administration reservoir decreases~~.

2. (Currently amended) The method [Method] according to claim 1 wherein the solvent is separated by evaporation.

3. (Currently amended) The method [Method] according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Currently amended) The method [Method] according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Currently amended) The method [Method] according to claim 5 where the solvent is removed by programming the pumping of the solvent.

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7. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Currently amended) The method [Method] according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Currently amended) The method [Method] according to claim 5 wherein the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

10. (Currently amended) The method [Method] according to claim ~~one of the claims~~ 2 wherein the solvent is discharged into the environment.

11. (Currently amended) The method [Method] claim ~~one of the claims~~ 2 wherein the solvent is flushed by a fluid.

12. (Currently amended) The method [Method] according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises a membrane.

14. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Currently amended) The method [Method] according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

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16. (Currently amended) The method [Method] according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Currently amended) A device [Device] for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance [solved] dissolved in a solvent to said administration device, wherein the administration device comprises an administration reservoir ~~suitable to receive the active substance solved in the solvent~~, a solvent removal element ~~means for absorption of solvent from the administration reservoir by evaporation~~ and an interface [means] suitable for transferring [of] the active substance from the administration reservoir to the porous surface.

18. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~device~~ is suitable to be arranged in vicinity to the porous surface.

19. (Currently amended) The device [Device] according to claim 18 wherein the interface ~~means~~ comprises an adhesive surface suitable to be attached to the porous surface.

20. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~means~~ is a membrane permeable for the active substance.

21. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element is separated from the administration reservoir by a separation means.

22. (Currently amended) The device [Device] according to claim 21 wherein the separation means is selected from the group consisting of a membrane, [[or]] a foam, [[or]] a cellular material, [[or]] a honeycomb, and [[or]] an air gap.

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23. (Currently amended) The device [Device] according to claim 21 wherein the administration reservoir and the solvent removal ~~means~~ element are spaced apart a distance by the separation means 14.

24. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises one our or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

25. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

28. (Currently amended) The device [Device] according to 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Currently amended) The device [Device] according to claim 26 wherein the dispensing ~~means~~ device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

30. (Currently amended) The device [Device] according to claim 28 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

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31. (Currently amended) The device [Device] according to claim [30] 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Currently amended) The device [Device] according to claim 30 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Currently amended) The device [Device] according to claim 30 wherein the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

34. (Currently amended) The device [Device] according to claim 33 wherein the administration of the active substance is determined by the signal of the at least one sensor.

35. (New) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (New) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is impermeant to the active substance and permeable to the solvent.

37. (New) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

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AMENDMENTS TO THE DRAWINGS

The attached Replacement Sheets labeled 3 of 4 and 4 of 4 are provided.

Sheet 3 of 4 shows FIG. 3 and FIG. 4A. FIG. 3 has been amended to correct a typographical error. The reference number 25 on the left of pipe 25 has been changed to 26. Support for this amendment is found in paragraph [0068] of the specification.

Sheet 4 of 4 shows FIG. 4B and FIG. 4C. FIG. 4C has been amended to correct typographical errors. The reference number 4 showing the tube or pipette has been added. The reference number 41 has been changed to 37, the second pinch valve and/or micropump. Support for these changes is found in paragraph [0075].

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REMARKS

Summary of Amendments to the Specification

Paragraph [0019] has been amended to correct a typographical error. US587322 (Lattin, et al.) has been changed to US5879322 (Lattin, et al.).

Paragraph [0039] has been amended to correct obvious errors. The phrase "an other mean" has been changed to "another means". The phrase "avoid negative decrease of the active substance due to accumulation of the solvent" has been changed to "avoid negative decrease of the concentration of active substance due to accumulation of the solvent". Support for these amendments is found in paragraph [0039] as originally filed which describes the carrying off of solvent e.g. by evaporation into the environment and the effect of such carrying off on the active substance.

Paragraph [0068] has been amended to correct typographical errors. Reference number 15 has been changed to 8. Support for this amendment is found in paragraph [0068] and FIG. 3 as originally filed.

Paragraph [0072] has been amended to correct an obvious error. The phrase "administration reservoir 5" has been changed to "drug reservoir 5". Support for this amendment is found in paragraph [0072] and FIGS. 4A, B and C as originally filed.

Paragraph [0075] has been amended to correct a typographical error. The sentence "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve 36 opens and depleted carrier solution is absorbed into the waste reservoir 13" has been amended to recite "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13." Support for this amendment is found in paragraph [0075] and FIG. 4C as originally filed.

Summary of Claim Amendments

Claim 1 has been amended. New claims 35-37 are being added.

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Claim 1 has been amended to recite "A method for transdermal administration, and "dispensing" and "removing" Support for these amendments is found in claim 1 as originally filed and, for example, in paragraph [0064]. Claim 1 has also been amended by replacing the phrase "such that the level of concentration in the administration reservoir decreases" with "wherein". Support for this amendment is found throughout the specification, and in particular in paragraph [0028],

Claims 2-9 and 12-16 have been amended to recite "The method". Claims 10 and 11 have been amended to recite "according to claim 2." Claims 18-34 have been amended to recite "The device".

Claim 17 is amended by replacing the term "solved" with "dissolved", omitting the phrases "suitable to receive the active substance solved in the solvent" and "for adsorption of solvent from the administrative reservoir by evaporation" and replacing solvent removal "means" with solvent removal "element". The "means" term of "interface means" has been omitted.

Claims 19 and 20 are amended by omitting the "means" term of "interface means".

Claims 21 and 23-25 are amended by replacing "solvent removal means" with solvent removal element".

Claim 22 is amended to recite the list is Markush group format.

Claim 29 is amended to recite "dispensing device" in agreement with claim 17.

New claim 35 is being added to provide antecedent basis for the term "control device" claim 31.

Support for new claim 36 is found throughout the specification, for example, in claim 17 as originally filed and in paragraphs [0028], [0034], [0035], [0037], [0039], [0056], [0059], [0062], and [0064]. Support for new claim 37 is found, for example, in paragraphs [0046] and [0050].

Conclusion

The fees for extra claims and any other fees associated with this filing may be

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charged to Deposit Account No. 50-1123.

Favorable consideration of all pending claims is respectfully requested. The Examiner is asked to the telephone the undersigned, should the Examiner have any questions or believe such a call would expedite prosecution.

Respectfully submitted,

August __, 2007

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8-9-07 C. Burton